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ABSTRACT

This paper reviews issues in fostering closer connections between higher education and the workplace and summarizes results of a 1995 survey of 404 New Jersey employers concerning the knowledge, skills, and abilities that New Jersey employers expect from higher education graduates and their suggestions for improving college-based workforce preparation. Fifty-seven percent of employers said it was difficult to find well-prepared job candidates for positions requiring college degrees. Employers gave the following skills or characteristics as most important: integrity and honesty, listening, reading, oral communication, and written communication. Employer-suggested improvements for institutions of higher education included providing more experience-based learning and more solicitation of input from businesses. The survey also investigated the kinds of training employers provided their workers and methods for improving the training services that higher education provides to the workforce. Most businesses provided on-the-job training or private consultant training to new employees. Businesses desired more information about higher education training capabilities and graduating student contact resources; many felt that teachers did not know enough about working in the real world to properly prepare students. Appendixes include complete survey results, the survey instrument, and details of its methodology. (Contains 29 references.) (NAV)

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ENHANCING THE CONNECTION BETWEEN HIGHER EDUCATION AND THE WORKPLACE

A SURVEY OF EMPLOYERS

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ENHANCING THE CONNECTION BETWEEN HIGHER EDUCATION AND THE WORKPLACE: A SURVEY OF EMPLOYERS

Carl E. Van Horn

October 1995

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The Education Commission of the States is a nonprofit, nationwide interstate compact formed in 1965. The primary purpose of the commission is to help governors, state legislators, state education officials and others develop policies to improve the quality of education at all levels. Forty-nine states, the District of Columbia, American Samoa, Puerto Rico and the Virgin Islands are members.

The State Higher Education Executive Officers is a nonprofit, nationwide association of the chief executive officers serving statewide coordinating boards and governing boards of postsecondary education. Fifty states, the District of Columbia and Puerto Rico are members.

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Foreword

In the 1992 report, *Building a Quality Workforce: An Agenda for Postsecondary Education*, the State Higher Education Executive Officers Committee on Workforce Preparation concluded that "the American system of secondary and postsecondary education suffers from a disconnection between schooling and work." The committee made several broad recommendations, including:

- Improving basic skills development
- Blending theoretical concepts with practical applications
- Increasing business participation in designing curriculum directly related to workplace needs
- Expanding cooperative and apprenticeship programs
- Identifying skills needed in the workplace and measuring what students know and can do against those skills

Today, the imperative for postsecondary education involvement in the preparation of the American workforce is even greater. In the coming decade, support for higher education is likely to decline. Reductions in federal aid to states for such programs as welfare and Medicaid will increase pressure to cutback other components of state spending. As one of the largest areas of " discretionary" spending in the state budget, higher education may receive more scrutiny and less financial support. Demands for linking higher education to the economic development and workforce needs of the state are going to escalate. Therefore, higher education institutions are going to have to find ways to become more responsive to the perceived needs of the business community.

SHEEO and the Education Commission of the States (ECS) are collaborating on several activities that involve postsecondary education in the development and implementation of systemic and comprehensive state-level workforce preparation systems. As part of this joint effort, this report is one in a series on the preparation of students for college and the workforce. *Enhancing the Connection Between Higher Education and the Workplace*, based on a survey of New Jersey employers conducted for the New Jersey Business-Higher Education Forum, illustrates the necessary role for colleges and universities in the education and training of the American workforce. We wish to express our deep appreciation to the author, Carl Van Horn, professor of public policy, Eagleton Institute of Politics, Rutgers, The State University of New Jersey.

This report is intended to help inform the discussion among state policy makers, educators, employers and community leaders who are committed to developing effective statewide workforce preparation systems.

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Associate Executive Director
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Director of Policy Studies for Higher Education
ECS

Preface and Acknowledgements

The New Jersey Business-Higher Education Forum was created by executive order under former Governor Jim Florio to develop strategies for making the higher education system more responsive to the needs of business and improving the education of a skilled workforce. The Forum, funded by a grant from the State of New Jersey, links business and higher education to enhance the learning experience of students, the relationship of research to the marketplace, and the productivity of New Jersey's businesses. The Forum's membership includes over 50 leaders from higher education and business.

The Forum recommended the establishment of *Quality Improvement Partnerships* between businesses and colleges and universities at its first statewide conference in March 1994.[1] Using the principles of continuous quality improvement, such partnerships join businesses, which are adopting quality processes, with colleges and universities; apply the education expertise of higher education institutions; bring the continuous improvement process into the college classroom; and, improve the match between the skills of graduates and the demands of the workplace.

The Forum has turned its attention to the last of these objectives — creating a strong customer-supplier relationship in the labor exchange between higher education and employers. Earlier versions of this paper were presented in May 1995 to higher education leaders, employers, and policymakers at the second New Jersey Business-Higher Education conference and at the National Forum on Student Preparation for College and the Workplace, sponsored by the State Higher Education Executive Officers (SHEEO) and the Education Commission of the States (ECS).

The author wishes to acknowledge several people who contributed to the preparation of this survey, the report and the work of the Forum. Dan Douglas, executive director of the Forum, provided significant administrative support and prepared the tables used in the earlier versions of this paper. David Applebaum and Margaret Koller of Rutgers University helped analyze data. Thomas Regan, Janice Ballou and the staff of the Center for Public Interest Polling at the Eagleton Institute of Politics managed the survey of employers. The Eagleton Institute of Politics provided staff support for the project. William Tracy, president of Workforce Futures, and Ken Dautrich, associate director of the Roper Center at the University of Connecticut, designed focus group discussions with employers and helped draft the survey instrument. I also would like to thank the Student Loan Marketing Association for supporting a literature review and interviews with higher education and business organizations and, Esther Rodriguez of SHEEO and Charles Lenth of ECS for their interest in this research.

Finally, Vic Pelson, chairman of Global Operations, AT&T and the first chairman of the Forum, and Saul Fenster, president of the New Jersey Institute of Technology and vice-chairman of the Forum, provided strong leadership and support for this project.

Introduction

The core issue concerning higher education and business is enhancing the linkage between academic programs and workplace performance. Higher education institutions, students and their families invest billions yearly in education at the associate's, baccalaureate, and graduate/professional levels. Higher education institutions confer highly valued credentials and offer training and certificate programs to meet specific needs of employers and workers.

It is widely assumed in policy-making circles that closer alliances between higher education and business, based on shared goals, will contribute to the nation's well being. Despite progress on strengthening the bond between higher education and the needs of business, a systemic customer-supplier relationship between the two sectors has not yet matured.

This paper reviews some of the issues involved in connecting higher education and the workplace and summarizes the results of a statewide survey of 404 New Jersey employers conducted in 1995. The survey is broadly representative of New Jersey's employers across all sizes of businesses and throughout all major sectors of the economy. **(See Table 1)** Complete survey results, the survey instrument and methodology may be found in the appendices.[2] The survey's purposes were to:

- Examine the knowledge, skills and abilities that New Jersey employers want from higher education graduates and explore methods for improving the connection between college-based workforce preparation and the needs of New Jersey employers

- Investigate the kinds of training conducted for incumbent workers and consider methods for improving the training services that higher education provides to the workforce

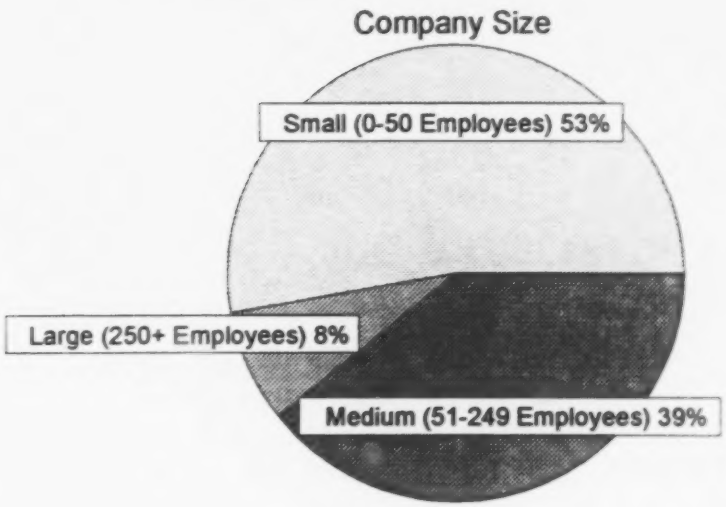
As with all surveys, this one is a snapshot of one point in time. It establishes a baseline against which progress can be measured by the higher education and employer communities. The survey provides valuable information about how New Jersey employers perceive the current status of connections between higher education and the workplace. Concomitantly, the information should be useful to policy leaders in other states who are attempting to develop or strengthen similar connections.

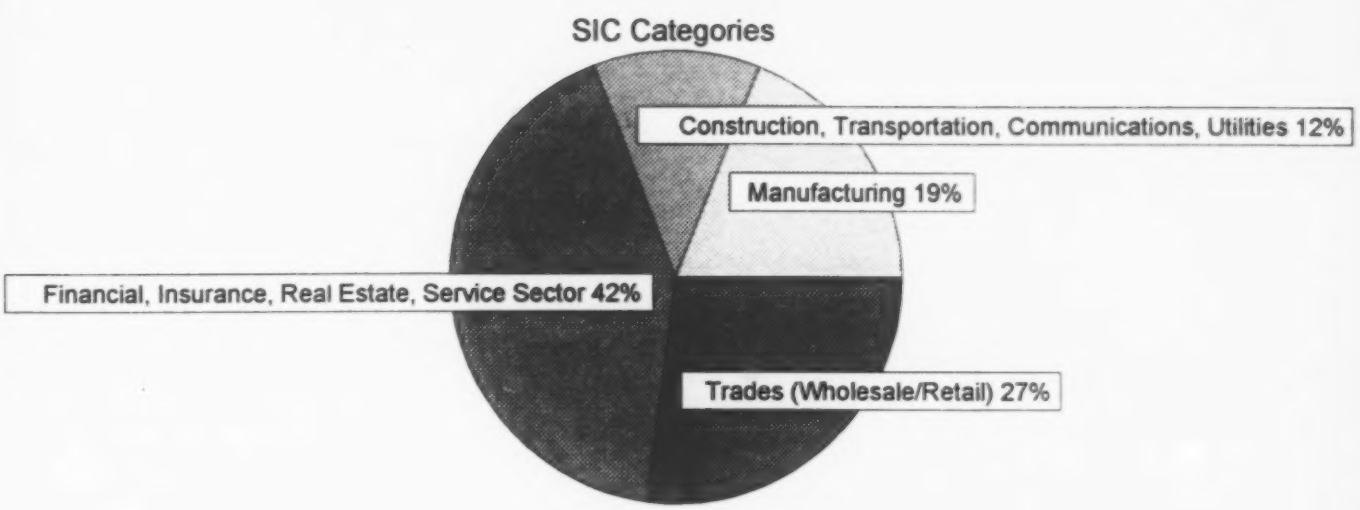
Higher Education and Workforce Preparation

For more than a decade, American business has complained that the skills of people entering the workforce were not sufficient to meet the challenges of a high-performance workplace. Dozens of reports by business and education groups warn that rapid technological change and global competition require a more highly skilled and flexible workforce. Business and education groups assert that American schools are not providing the necessary knowledge, skills and abilities for the new world of work. The influential report, **A Nation at Risk**, issued in 1983, labeled the void between the needs of the workplace and the skills of new

Table 1
Survey Demographics

Survey Respondent Size - N=404





workers a "national emergency."[3] Since then, a wide swath of the nation's business community and educators have diligently addressed this problem. Study groups recommended improving the education and skills of new and incumbent workers.[4] Governors and legislators upgraded standards and requirements for elementary and secondary students.[5] In 1990, President George Bush and the nation's governors embraced six national education goals for the year 2000. Congress initiated a process to create national skills standards — Goals 2000: Educate America Act — and furnished incentives for coupling secondary education and the workplace — The School-to-Work Opportunities Act.

Thus far, the business community, educators and policymakers have focused on the perceived deficiencies of elementary and secondary education. Inadequacies in workforce preparation were perceived as far more severe for non-college bound students and especially for the three out of every four students who do not complete four years of college.

Attention is turning gradually to the knowledge, skills and abilities of college and university graduates and whether they are adequately prepared for work. Objective 5 of the National Education Goal 5 (now known as Goal 6) states:

> *the portion of college graduates who demonstrate an advanced ability to think critically and communicate effectively and solve problems will increase substantially.*

This broad goal, the interests of educators, and most significantly, the needs of America's businesses are stimulating research and collaborative enterprises to bridge perceived gaps between the quality of higher education and the workplace.

According to the National Goals Panel in its 1994 report, there is a lot of work to be done in improving the connection between higher education and the workplace:

> *Just as we are not sure of what K-12 students are learning because of inadequate standards and measurements, we are also not sure of the standards underpinning higher education...We need a clearer understanding of the knowledge and skills these graduates attain and how they relate to the demands of a world marketplace.*

Faculty and administrators in higher education recoil at this blunt message, but it is a widely shared view of policymakers and business leaders.[6]

Mapping Employer Needs

Discussions about strengthening the relationship between the requirements of the workplace and academic education often occur without delineating underlying assumptions. Logically, three conditions must be met:

- Employers must precisely define the knowledge, skills, and abilities (KSAs) that are important for improved work performance

- Colleges and universities must be able to redesign programs and teaching methods to transmit those KSAs

- Higher education institutions must assess student performance on those KSAs and report to prospective employers.

The New Jersey Business-Higher Education Forum survey explored this first question: "What do businesses think about today's college graduates and what do they expect from them?"

There are no universally-accepted measures of desirable KSAs employers demand from new workers, but college and university students and faculty and policymakers are investigating these issues. Research is being conducted through focus groups, survey research and detailed analyses of the KSA specifications associated with particular jobs. Though still in the early stages, these projects are cataloging the generic KSAs employers want from entry-level workers receiving a high school or two-year degree. Less information is available about what employers expect of graduates from baccalaureate, graduate and professional schools.

Several research projects are charting broad, generic KSAs that cut across occupations. Although the KSAs identified in these schemes are not identical, most contain the following elements:[7]

- Interpersonal skills

- Communication — both oral and written

- Critical thinking

- Motivation and personal attitudes

- Ability to work with data and information

- Ability to apply mathematics

Tests measuring KSAs needed for specific jobs are already in use in many private firms.[8] The American College Testing (ACT) was retained by the U.S. Departments of Labor and Education and the Office of Personnel Management to produce assessment measures of workforce competencies and skills as interpreted by the Secretary's Commission on Achieving Necessary Skills (SCANS).[9] ACT is undertaking a National Job Analysis Study to "identify those job behaviors, or competencies and skills, that are common across occupations."

ACT also is examining the relationship between time on the job and proficiency levels and outline pre-requisites for workplace competencies. A central objective of the project is to affect curriculum standards and teaching practice, particularly at the secondary school level. The process undertaken by ACT, as well as its research findings, also may be applied by policymakers and educators to the post-secondary schools.

Research and collaborative projects between educators and employers also are under way to delineate industry-specific skills standards. The U.S. Departments of Labor and Education are collaborating with more than a dozen industrial sectors in the formation of voluntary national skills standards. Under the rubric of the National Skills Standards Development Board (which was authorized by the Goals 2000: Educate America Act) educators and industrial organizations are striving to validate skills clusters and competencies needed by entry-level workers.

The National Skills Standards Board anticipates that standards will assist educators to equip students with work-ready skills upon graduation from high school or two-year technical schools. Although the Skills Standards project may not be directly applicable to many four-year colleges and universities, the experience offers insights for them.

Illustrative are the Skills Standards for the electronics industry.[10] With financial support from the federal government, the Electronics Industry Association empaneled a technical committee that consulted with over 500 people in education and industry. The resulting standards and estimated preparation times covered five areas: behavior and work habits (e.g. teamwork); technical skills (e.g. digital and analogue circuits); utilization of test equipment and tools; basic skills (e.g. technical literacy, communications, and critical thinking skills), and additional skills, such as laser applications.

A number of professions, including accounting, law, and business are trying to bridge perceived gaps between KSAs desired at work and what goes on in the classroom by more clearly defining needs:

- The Institute of Management Accountants and the Financial Executives Institute want post-secondary education to reflect more closely the needs of employers. A survey of over 800 corporate executives reported widespread disappointment with the knowledge and skills possessed by entry-level accounting graduates.[11]

- The Commission on Admission to Graduate Management Education released a study in 1990 challenging business schools to reform traditional curricula. The Commission recommended courses that equip students to handle team building, communication, information technology, and professional ethics.[12]

- The New York Software Industry Association want universities in New York City to better educate students for entry-level jobs. A Software Training Alliance will co-sponsor, with colleges and universities, internships and specialized training for the industry.[13]

The Skills and Qualities New Jersey Employers Want Employees to Acquire

In constructing the New Jersey Business-Higher Education survey, we drew upon the report of the Secretary's Commission on Achieving Necessary Skills (SCANS). SCANS, initiated by the U.S. Department of Labor in the late 1980s, classified generic skills essential in the workplace. SCANS listed the following "necessary" skills: foundation skills such as

reading, writing, math, listening and speaking; thinking skills such as creative thinking, decision-making, problem solving, reasoning and knowing how to learn; and personal qualities such as responsibility, integrity, self-esteem and sociability.[14]

The survey asked the employers to assess the importance of the SCANS skills sets for their employees. The survey results demonstrate that New Jersey employers are especially interested in people who are honest, know how to listen and read, and have good oral communication skills. **(See Table 2)** Eighty-four percent of those surveyed felt that integrity and honesty were extremely important; 73%said that listening was extremely important; and, 70% of the employers said that reading was extremely important. ("Reading" was defined as "locating, understanding and interpreting written information in documents such as manuals, graphs and schedules.") Also rated highly as extremely important skills, but ranked somewhat lower are oral communication skills, (68%); written communication skills (56%); and, responsibility and self-management (55%). Of the top six skills and qualities, rated "extremely important" two are "personal" skills; the other four are "foundation" or basic skills.

The Preparation of Recently-Hired Graduates

A majority of the firms responding to the survey (55%) have hired new employees for positions requiring a two- or four-year degree from New Jersey colleges and universities during the last three years. Many of these employers express concerns about the level of preparation received by bachelor's and associate's degree graduates. **(See Table 3)** Four out of five New Jersey employers perceive no differences between the quality of education obtained by graduates of New Jersey institutions versus those from other states. Employers also did not perceive substantial changes in the quality of college graduates over the last five years. One employer explained her concern about the quality of graduates this way: "It's not that they have gotten worse, it's that the demands in the workplace are rising rapidly. Today's young people have to be better than before."

In particular, employers are not completely satisfied with the preparation recent New Jersey college graduates have received in the most valued skills and personal qualities. **(See Tables 4A and 4B)** Across nearly all skills sets, employers reported that no more than a third of recent college graduates were "highly prepared for work." A majority of employers felt that graduates of four year institutions were "prepared for work, but could be better." For example, one in five employers said that recent graduates were highly prepared in listening skills and about half said the graduates were prepared, but could be better. As another example, one third of respondents reported that recent college-educated hires were highly prepared in reading and 56% percent said they were prepared, but could be better. Employers said that graduates of two-year institutions were not as well prepared for work as graduates of four-year institutions. This finding is not surprising because graduates of four-year programs have two additional years to master valued skills. Across nearly all skills sets, employers reported that no more than a quarter of recent two-year college graduates were highly prepared for work. Opinions were divided as to whether two-year graduates were "prepared,

Table 2
Skill Preparedness

How important is it for employees to be prepared in the following skills?

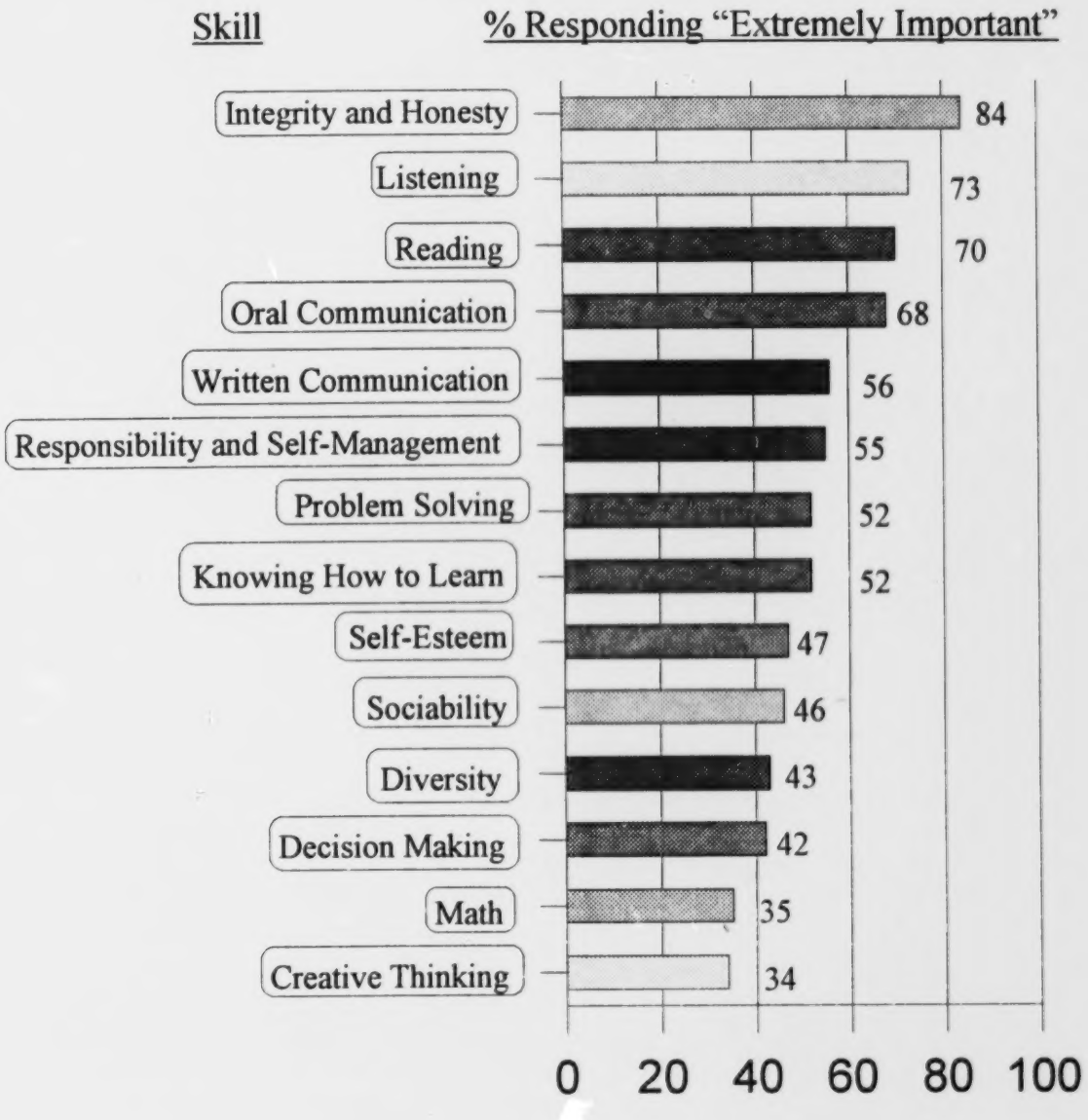


Table 3
Student Preparedness

How prepared are students graduating with degrees from New Jersey colleges and universities for jobs in companies like yours?

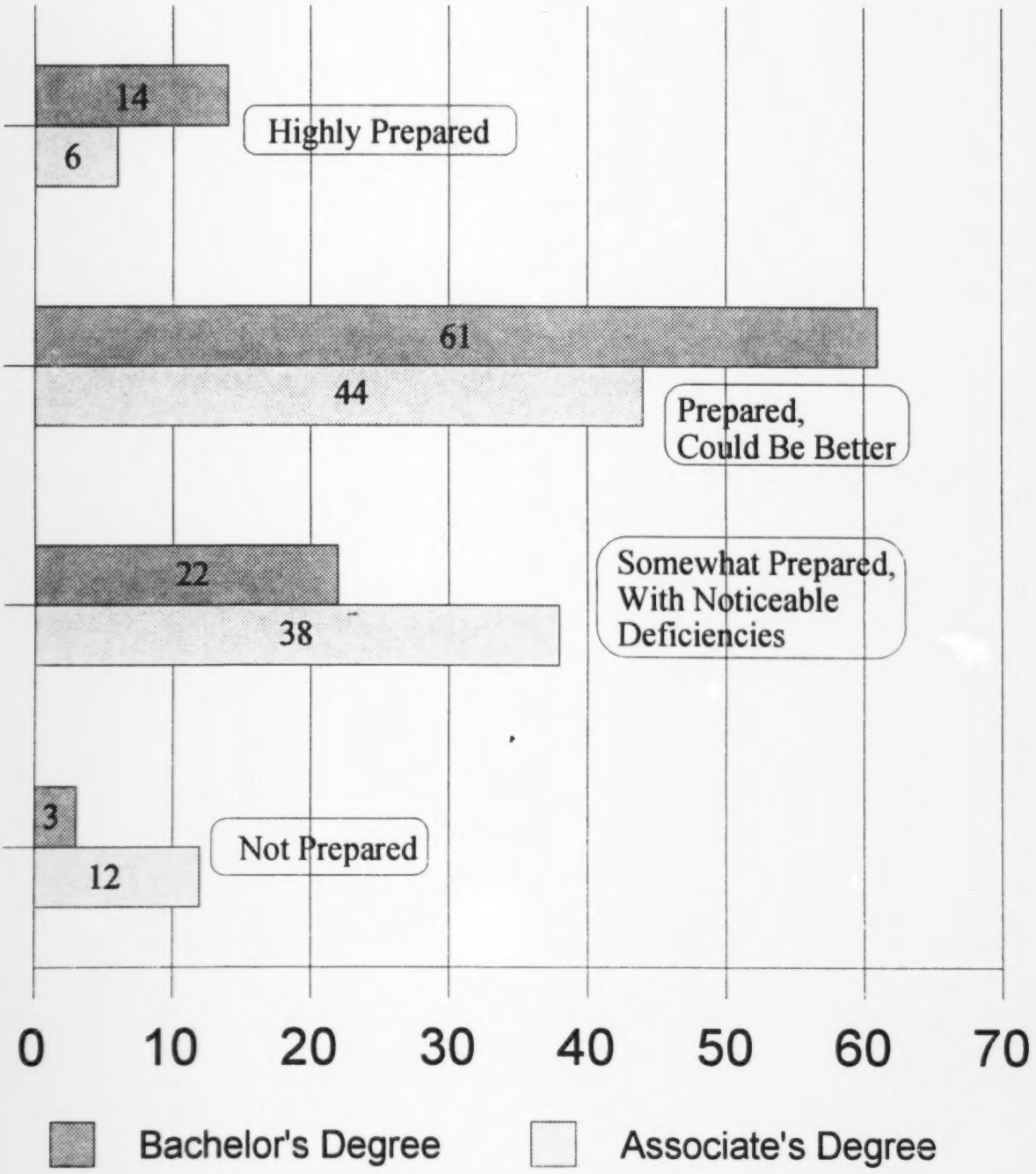


Table 4A
Skill Preparedness (Associate's Degree)

How prepared are graduates in each skill area?

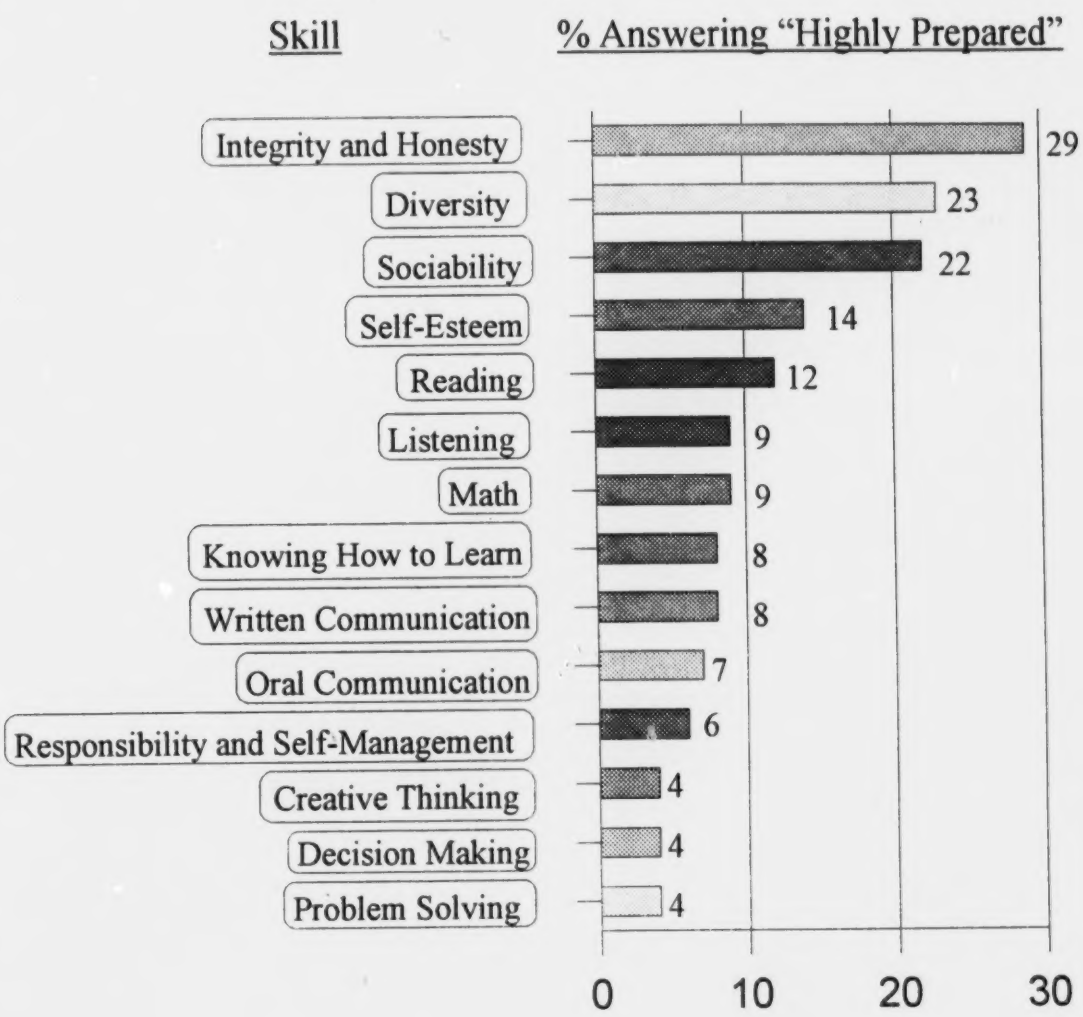
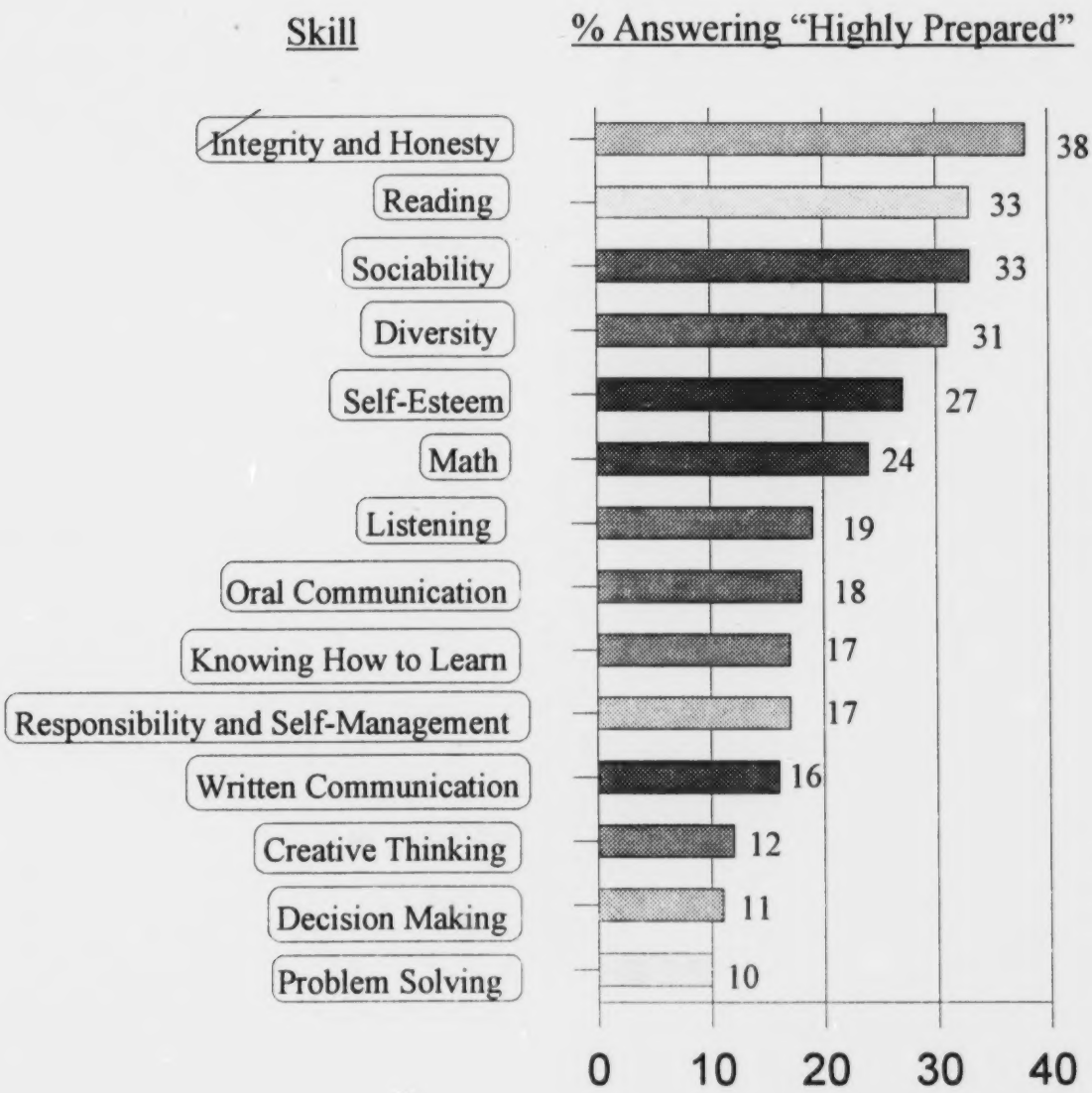


Table 4B
Skill Preparedness (Bachelor's Degree)

How prepared are graduates in each skill area?



but could be better" or "somewhat prepared with noticeable deficiencies." For example, 8% of employers said that new two-year college-educated hires were highly prepared in written communications skills; 38% said they were prepared, but could be better; and 41% said they were somewhat prepared, with noticeable deficiencies.

Elaborating on their concerns with college graduates, several employers remarked that colleges and universities had been too slow to respond to changing workplace conditions. One personnel officer said, "There has been a fundamental change in the workplace. Higher education institutions don't understand this. As the customers, if they don't get it, we will make them change, or create alternatives." Another complained, "Colleges and universities aren't flexible — they are stuck with a course catalog that never changes."

Recruiting Qualified Candidates

A substantial proportion — 57% — of New Jersey employers say it is difficult to find well-prepared job candidates for positions that require bachelor's or associate's degrees. **(See Table 5)**. The smaller the firm, the harder it is for them to hire well-prepared applicants. Larger firms "overcome" perceived local labor market deficiencies by tapping the national labor market. Smaller firms cannot afford this tactic.

New Jersey's employers expressed some concerns about the responsiveness of New Jersey colleges and universities to their recruiting needs. They expressed the greatest satisfaction with private universities, with one in three saying they were doing an excellent job of meeting their recruitment needs. Approximately one in four respondents felt that Rutgers, the State University, and private colleges were doing an excellent job for meeting their demands for new workers. In contrast 14% of employers said that community colleges did an excellent job of meeting their needs, and 16% of respondents gave excellent ratings to state colleges.

When recruiting new employees, the employers reported that cooperative education, internships, and other experienced-based learning relationships affect recruiting relationships with colleges and universities. **(See Table 6)** Also important, but less so, are the quality of the institution's placement office, the selectivity of the institution in admitting students, past experiences with the college or university, and existing business relationships.

Table 5
Finding Prepared Workers

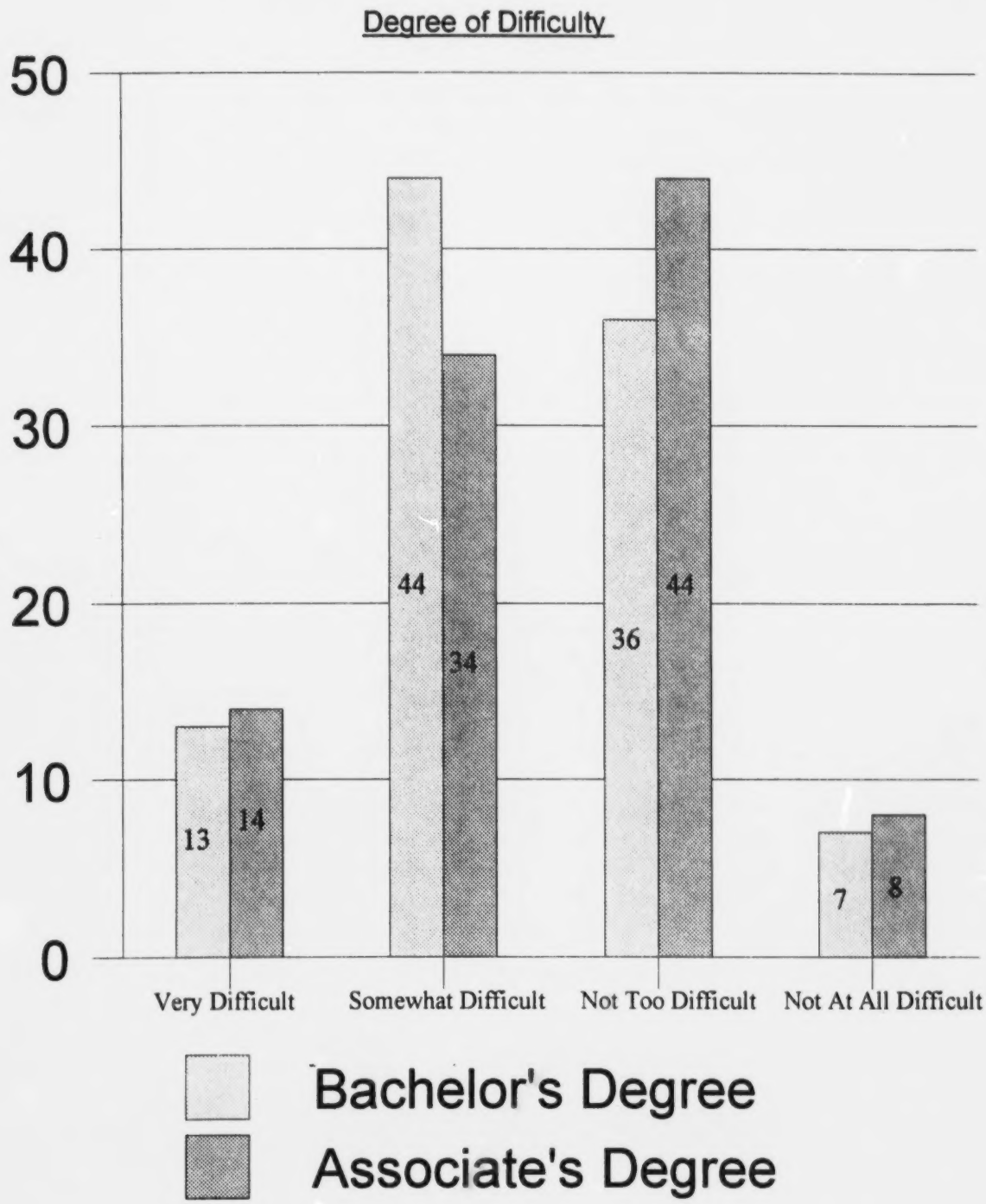
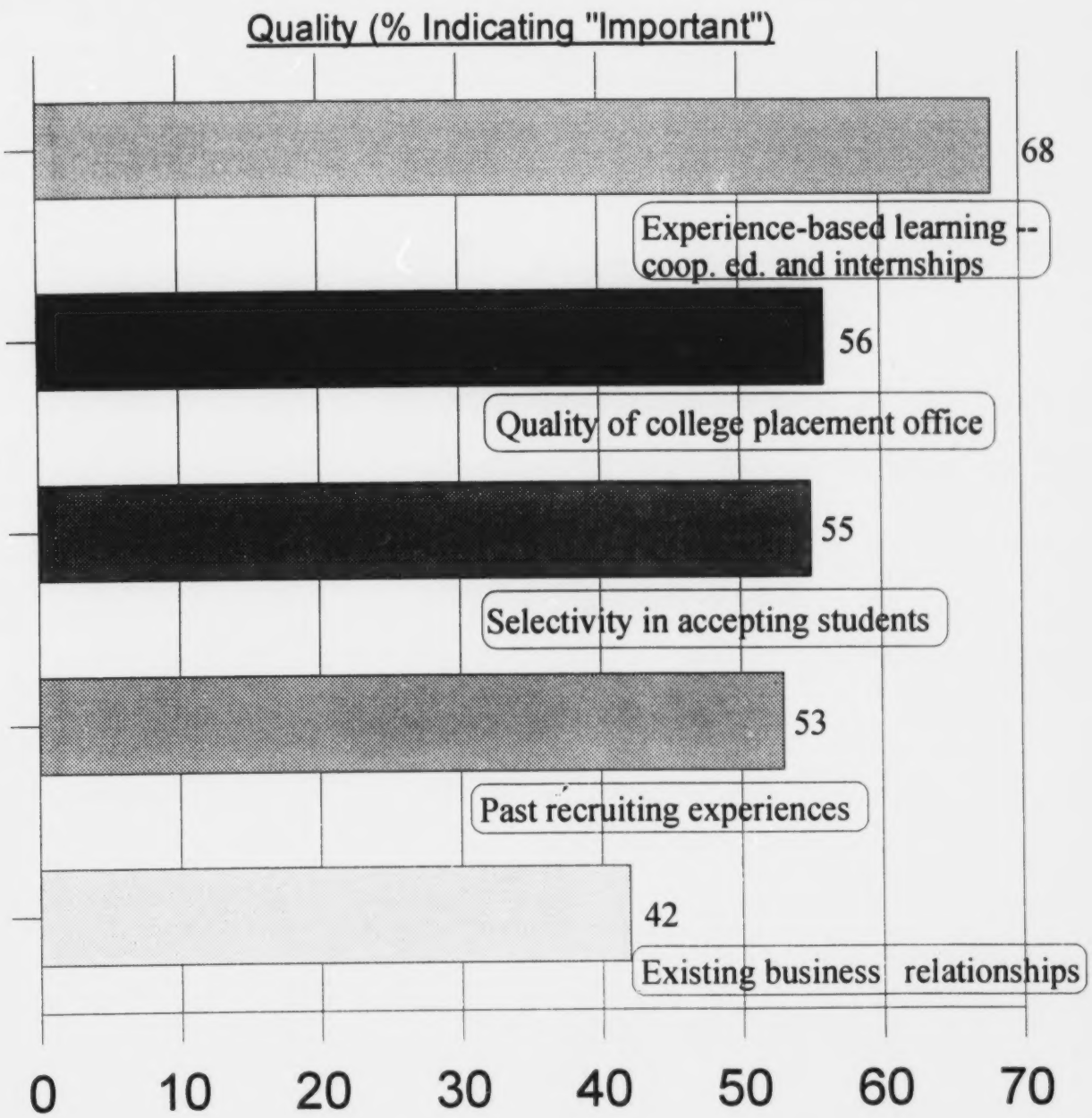


Table 6
Qualities Businesses Look for When Recruiting from New Jersey Colleges and Universities

How important are each of the following to your company in how it recruits new college graduates from New Jersey colleges and universities?



The Roots of Employer Concerns

Although employers express dissatisfaction with the quality of entry-level, college-educated workers, it is less clear why. Curriculum standards have increased throughout higher education and there is considerable evidence that student performance in high school and college is better than it was 20 or so years ago.[15] Therefore, one must be cautious when interpreting employers' views about the qualifications of new workers.[16] Employer surveys can be misinterpreted by educators looking to strengthen ties between the academy and jobs.

Employers may hold contradictory expectations about what they want from the education establishment.[17] They value training for narrow, job-specific skills; but they also complain that graduates of postsecondary institutions lack general, "academic" abilities, such as reading, writing and oral communications. Often, employers seek qualities in new hires that may not be taught in two- or four-year colleges and graduate/professional schools.

Hiring decisions and job performance are often based on considerations other than the skills needed to perform the job. Many firms are more interested in the reliability and dependability of workers.[18] The "attitudes" of applicants ranked higher than any other component in hiring decisions, according to the University of Pennsylvania's comprehensive national survey of American businesses. Academic performance, the experience and reputation of the applicant's school, and teacher recommendations were the least important factors in hiring decisions for entry-level workers.[19]

There may be less of an "academic skills gap" than a gap in the KSAs that employers want and the types of workers they find in the marketplace. Problems also arise because colleges and universities typically report only grades to prospective employers, but businesses would like to know considerably more about students considered for job openings.[20]

Moreover, as firms downsize and cut costs, they are reluctant or unable to invest in entry-level training programs that were traditionally used to complete the transition from college to work.[21] Under these circumstances, even if the quality of students continues to rise, employers feel compelled to externalize the costs of workforce preparation and training onto postsecondary institutions and individuals.

Higher Education and Employer Needs

Recently, higher education has played a relatively modest role in revitalizing American public education. State-level reforms concentrate on upgrading elementary and secondary education. Major federal policy reforms, such as school-to-work initiatives, are directed at improving linkages between high school and the workplace. Higher education is "often portrayed not as part of the solution, but as part of the problem — supplying teachers who can't teach, managers who can't manage, and graduates who are insufficiently literate and numerate."[22]

There are many obstacles to improving higher education/employer alliances. Educators at four-year institutions fear that the rise of technically-demanding jobs will depress enrollments

as individuals acquire the skills they need at vocational schools, community colleges, private training schools and on the job. Faculty members resent external intrusions on the fiercely guarded prerogative of determining educational content and pedagogy. Governors and legislators, skeptical that higher education institutions will reform themselves, are demanding greater "accountability."

With over 3,500 colleges and universities nationwide, it is difficult to characterize relationships between higher education and employers with a broad brush. Interviews with knowledgeable individuals and a review of the literature revealed many instances where the two sectors are working effectively together.[23] Colleges and universities, including those in New Jersey (and the schools, departments and programs within them), have taken some or all of the following steps to improve connections to employers:

- Established advisory committees with private sector representatives giving input about desired KSAs and hiring expectations
- Maintained placement offices with responsibility for outreach to the employer community
- Used internships and cooperative education to enhance learning experiences and to develop appreciation of the workplace
- Given faculty release time to work closely with particular industries so that they can better understand their needs
- Surveyed program graduates to determine the applicability of educational programs to their work experiences

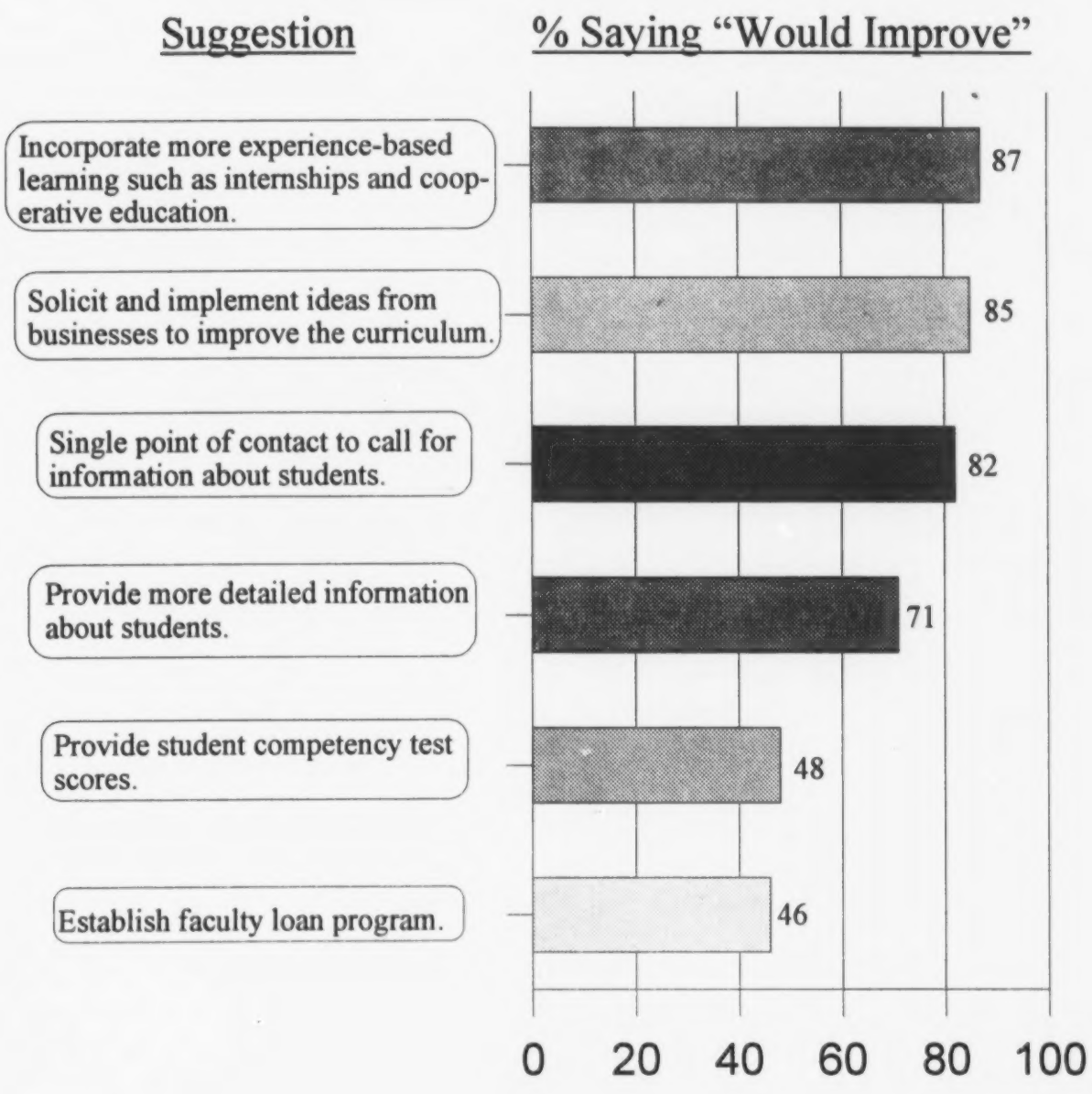
The New Jersey Business-Higher Education Forum's survey of employers reveals overwhelming support for several steps that could improve the connection between employers and higher education. **(See Table 7)** Employers are especially interested in expanding opportunities for experienced-based learning, such as internships and cooperative education. Employers told our interviewers that cooperative education and internships provide the best indicators of a graduate's ability to make the transition from college to work. Employers also want greater input into the curriculum. Many employers told us they were frustrated because colleges and universities have not responded to the rapidly changing business environment and the increased demand for a high performance workplace.

Finally, employers would like to have a single point of contact at higher education institutions for information about students and more information about students who are seeking jobs. Employers complained that traditional transcripts furnish no more than a superficial impression about the job applicant. Employers would like to know more about the knowledge, skills, and abilities that students may have acquired in particular courses of study. They also value information on the extra-curricular activities of the job candidates.

Researchers are working to develop assessments of how well students learn generic and specific skills and abilities sought by employers. For example, the National Assessment of College Student Learning, an initiative of the National Center for Education Statistics at the

Table 7
Recruiting Suggestions for Colleges and Universities

Would the following suggestions improve your company's recruiting relationship with colleges and universities?



U.S. Department of Education, has sponsored several projects to define higher-order communication and thinking skills and test student mastery.[24] Thus far, no widely accepted tests have been developed. There also are disagreements about whether assessing and reporting on student skill acquisition is desirable.[25] Support for this point of view may be found in the survey of New Jersey employers. Only 12% of respondents said that competency test scores would greatly improve recruiting relationships with colleges and universities.

The task of creating broadly accepted assessment tests is truly daunting. As one scholar observed, "...these questions go well beyond any experiences educators in the United States have had in the arena of assessment and public policy."[26] For example, the National Center on Postsecondary Teaching, Learning, and Assessment at Pennsylvania State University convened 600 faculty, employers and policymakers in a two-stage Delphi process to search for agreements and disagreements on the importance of specific KSAs. According to these scholars, consensus exists on the importance of certain basic and advanced skills, but there is little knowledge or accepted measuring techniques for determining how well college graduates master those skills in communication and critical thinking.[27] As an alternative to standardized tests of student competency, researchers have examined the feasibility of using teaching practices as indicators of student learning.[28] This work concluded that indicators of instructional practice can be empirically connected to desired KSAs and thus generate useful information for educators and potential employers.

Workforce Training and Retraining

The New Jersey Business-Higher Education Forum survey also explored employer opinions about training and retraining their college-educated employees and the role that higher education can and should perform in providing those services. Three-fourths of the New Jersey employers reported that they provide some form of training to improve the skills of their college-educated, professional employees. The most commonly provided training are in the areas of problem-solving (45%); decision-making (39%); responsibility and self-management (39%); oral communication (32%); creative thinking (29%); written communication (28%); and, listening (27%). **(See Table 8)** Larger employers were more likely to provide some form of training than the medium or small employers surveyed. Eighty-six percent of employers in the service sector provided training, as compared with 78% of manufacturing concerns, 65% of the wholesale and retail trade firms, and 62% of the construction, transportation, communications and the utilities.

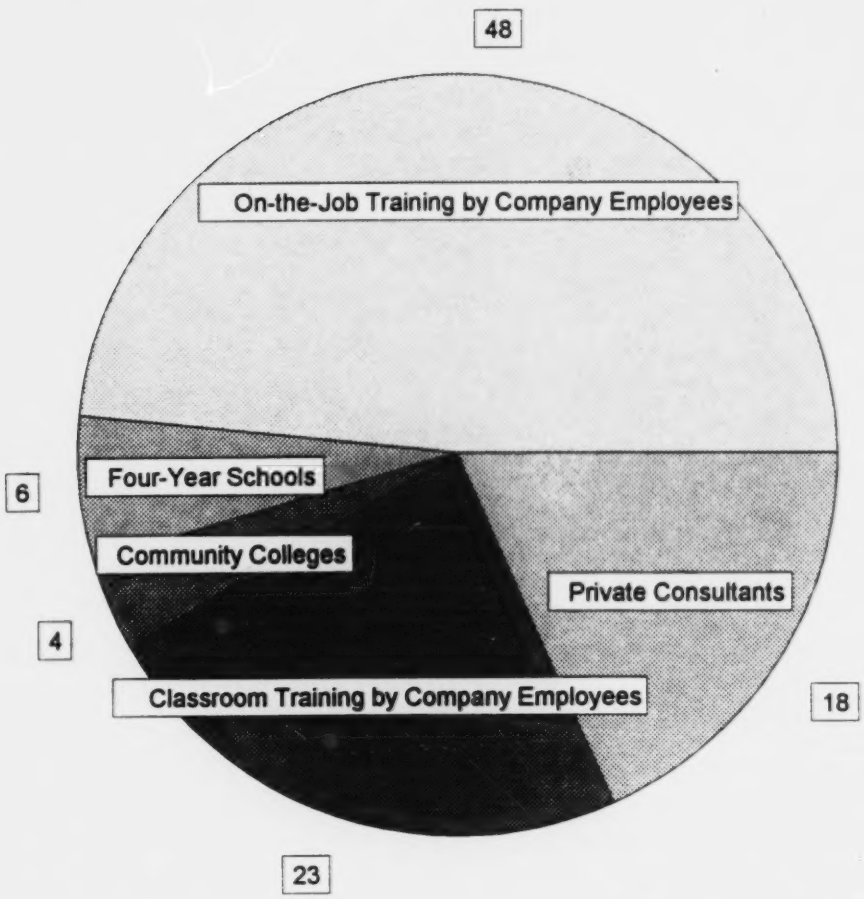
Higher education institutions in New Jersey are not the first choice for training the college-educated employees of private employers. The preferred method is on-the-job training provided by other company employees. **(See Table 9)** Nearly half of the training dollar is spent in this manner. Firms estimate that about one in four dollars of their training is delivered through structured, classroom training with other company employees as instructors; about one in five training dollars are provided via private consultants. Only 6% of the resources for skills training are delivered by four-year institutions and only 4% is provided by community colleges.

Table 8
Training Areas

In what skill areas does your company provide training?

Table 9
Training Methods

Type of Training Provided (By Mean %)



Less than three in ten employers surveyed have contracted with a New Jersey college or university to provide training services within the last three years. Large employers were twice as likely to use higher education-based trainers than medium or small employers. Of those who utilized higher education for training, community colleges were the most common provider, followed closely by Rutgers University and state colleges. Private institutions were less likely to provide training assistance to New Jersey employers.

Employers are most satisfied with the training they received from private consultants — 34% of those using private consultants or trainers indicated that their services were "excellent." Employers were less pleased with training provided by two- and four-year institutions. One in five said that training provided by colleges and universities was excellent.

New Jersey employers spend most of their training resources (on average 37%) on improving the skills of core process staff — people who provide the goods and services that constitute the firm's product. One in four training dollars is spent on managers and supervisors, whereas about one in five training dollars goes to train new hires with at least a high school education. Fifteen percent of resources, on average, are spent training executives of firms.

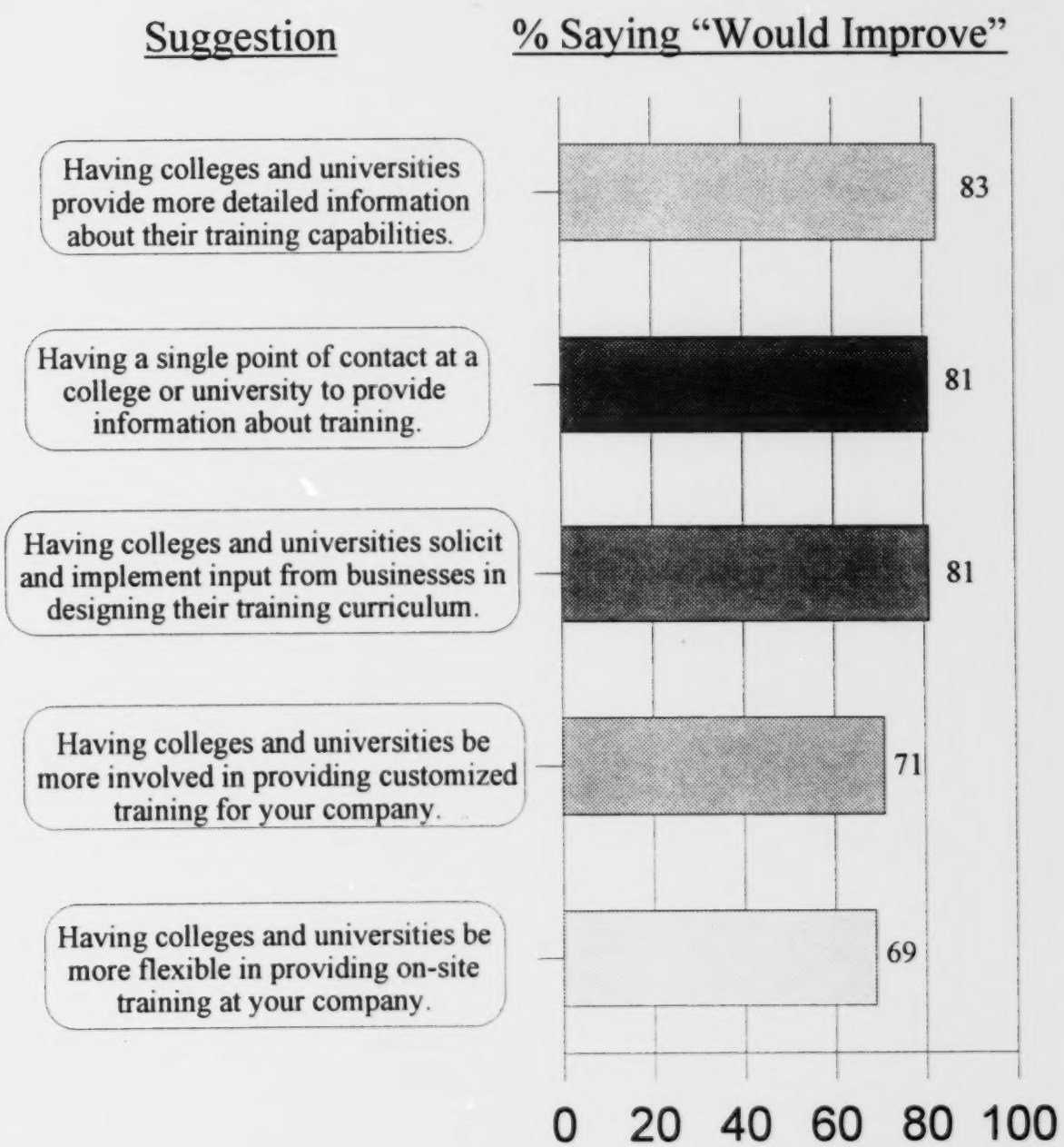
Approximately, half of the employers surveyed have some form of tuition reimbursement for employees enrolled in courses at colleges and universities. Eight in ten large employers offer tuition reimbursement to their employees, whereas 62% of medium-sized employers and 46% of small employers have such policies. Wholesale and retail trades were least likely to provide tuition reimbursement (37%), compared with manufacturing at 68%, services at 62%, and construction, transportation, communications and utilities at 59%.

Improving Higher Education's Role in Training Employees

Employers would like higher education institutions to involve them more in the design of training curriculum, to provide more information about training capabilities and establish a single point of contact where they can find out about training opportunities. **(See Table 10)** Survey respondents also would like to see New Jersey's colleges and universities become more involved in providing customized training to their firms. Additionally, employers want New Jersey higher education institutions to be more flexible in providing training services on the job rather than in colleges of university classrooms.

Table 10
Suggestions for Improving Relationships Between Business and Schools

Would the following improve your company's training relationship with colleges and universities?


Suggestion
% Saying "Would Improve"
Having colleges and universities provide more detailed information about their training capabilities.
83
Having a single point of contact at a college or university to provide information about training.
81
Having colleges and universities solicit and implement input from businesses in designing their training curriculum.
81
Having colleges and universities be more involved in providing customized training for your company.
71
Having colleges and universities be more flexible in providing on-site training at your company.
69
0 20 40 60 80 100

Summary and Conclusions

Summary

The survey of New Jersey employers provides the following valuable information that educators, businesses leaders and policymakers should consider as they attempt to improve the connection between higher education and employers.

1. There are significant concerns about the quality of higher education graduates.
2. Graduates may not be highly prepared for the skills most valued by employers.
3. Employers want to know more about students before hiring them.
4. Employers overwhelmingly support experienced-based learning programs, such as internships and cooperative education; they also would like to have greater input in the design of college-level curriculum and more information about students entering the job market and easier access to that information.
5. Employers are not very interested in formal testing of college graduates.
6. Three out of four employers provide training for their college-educated employees. Problem-solving, decision-making, writing, and listening skills are the skills clusters where most training dollars are invested.
7. On-the-job training and training conducted by private consultants are the strategies most often used by employers to train their workers. Two- and four-year institutions of higher education are much less likely to provide skills training for New Jersey firms.
8. If higher education institutions provide training, employers want more involvement in the design of training courses and greater flexibility in methods of delivery.

Conclusions

There is wide agreement that more must be done to strengthen the bond between higher education and employers. Many employers say they are having difficulty hiring college graduates who have the skills they need. Employers are placing greater emphasis on teamwork, communications skills, problem-solving, and creative thinking. Business people often say that faculty members do not know enough about the world of work and are thus ill-prepared to teach necessary work skills. They worry that higher education does not realize that employers are their customers. Some college placement offices view employers as customers, but say that faculty do not, so the curriculum does not reflect employers' needs.

Despite examples of significant progress, a strong case can be made that current efforts either are insufficient or work imperfectly. A review of community college connections with the private sector concluded pessimistically:

> *...institutionally, most educational providers are relatively distant from employers; they have little knowledge of specific employers, job opportunities, hiring requirements, promotion opportunities in various occupations and with specific employers, and other aspects of local employment that are crucial to their students and to the content of their programs...the incentives for educational institutions to be responsive to employers are lacking since they are enrollment-driven and not outcome-oriented.*[29]

Many postsecondary institutions are responding to employers' concerns, but significant resistance persists. Leaders from higher education complain that employers do not adequately communicate what they need from college graduates. When they focus narrowly on their company's needs, it is difficult for colleges and universities to reflect those concerns in the curriculum. College and university officials point out that high school graduates are ill-prepared for college-level work, making their task much more difficult. Academic leaders assert that they are doing a better job than before in preparing students for the workforce and argue that students should push faculty members to focus on practical areas of study. Some academics resent what they regard as crass attempts to transform colleges and universities into "vocational schools" and to subvert the nobler purpose of education for its own sake. Suspicion and resentment are fueled because the pressure for greater higher education/ workplace connections is coming primarily from business leaders and politicians rather than from the faculty and academic administrators.

Significant progress has been made on the crucial step of stipulating the knowledge, skills and abilities vital to employers. A consensus is emerging on the basic elements. Efforts by industrial sectors to specify clusters of necessary skills are promising and could contribute lessons for other areas of the economy. Less progress has been made on assessing the performance of college students in acquiring the skills and abilities desired by employers. Designing such measures is difficult and also problematic because many of the desired skills and abilities are not taught in colleges and university classrooms and laboratories. Questions still must be resolved about what should be taught in schools, what should be taught on the job, and what cannot be taught at all.

Students, faculty, and academic administrators quietly or openly resist such assessment tools. Many of them worry that the shift to outcome measures will not be used to assess students, but rather to punish institutions whose students do not do well on them. Institutions fear the consequences of distributing test results and institutional performance trends to prospective students and their parents. The survey of New Jersey employers also suggests that employers are not very interested in standardized tests.

Underlying the debate about postsecondary education and the workplace are issues of accountability and control. At what level — students, department, program, school, state, nation — should accountability be centered? The National Goals Panel embraces a model whereby voluntary national standards will be formed and disseminated for application by states, higher education institutions and employers. Most state government officials would prefer to handle these issues in a decentralized manner. Colleges and universities argue that accountability is properly a responsibility of each institution, school, and department. Who will decide what skills and abilities are important, how curriculum will be reshaped, and whether and how student performance will be measured? Such questions are not new to higher education, but the business community seems more determined than before to get what it needs from higher education.

Ultimately, the extent of change in uniting academic programs with workplace needs depends on two factors. First, how forcefully business presses its concerns with government officials, the higher education establishment, and the public; and second how responsive institutions of higher education are to the demands for change. The higher education institutions that

demonstrate they can adapt most quickly are likely to succeed in the years ahead. Those that resist change may face shrinking financial support from the private sector and government and declining enrollments.

Notes

1. See Carl E. Van Horn, Business and Higher Education: Partnerships for Quality; A Report on a Conference sponsored by the New Jersey Business-Higher Education Forum, (New Brunswick, New Jersey: Rutgers University, June 1994).

2. Excluded from the sample were government employers, such as state, county, and local government. Included in the sample were private and public educational institutions. Significant differences found between different size employers or between different industrial sectors are noted. For this survey small employers were defined as those from 50 and under (214 respondents), medium, from 51 to 249 (158 respondents), and large, 250 and over (32 respondents). Employment sectors were grouped as (1) financial, insurance, real estate and services (hereafter services); (2) construction, transportation, communications and utilities; (3) manufacturing; and, (4) wholesale and retail trade (hereafter trade).

3. National Commission on Excellence in Education, **A Nation at Risk: The Imperative for Educational Reform** (Washington, D.C: U.S. Government Printing Office, 1983).

4. See, for example, The Hudson Institute, **Workforce 2000** (Washington, D.C: U.S. Department of Labor, 1984); Commission on the Skills of the American Workforce, **America's Choice: High Skills or Low Wages** (Rochester, NY: National Center on Education and the Economy, 1990); Secretary's Commission on Achieving Necessary Skills (SCANS), **What Work Requires of School: A SCANS Report for America 2000** (Washington, D.C.: U.S. Department of Labor, 1991).

5. See, for example, National Governors' Association, **Enhancing Skills for a Competitive World** (Washington, D.C.: NGA, 1992); E.N. Andrew and W. N. Grubb, **Making High Schools Work: Patterns of School Reform and the Integration of Vocational and Academic Education**, National Center for Research in Vocational Education (Berkeley, California: University of California at Berkeley, 1992); and W. Clune and J. Patterson, **The Implementation and Effects of High School Graduation Requirements: First Steps Towards Curricular Reform** (Research Report RR-011), Center for Policy Research in Education (New Brunswick, NJ: Rutgers University, 1989).

6. **An American Imperative: Higher Expectations for Higher Education,** a report on the Wingspread Conference on Higher Education, 1993. See, also, for example, The Conference Board, "Partnerships for a Prepared Work Force: A Conference Report" (New York: The Conference Board, 1994).

7. See, for example, Anthony P. Carnevale, Leila J. Gainer, and A.S. Meltzer, **Workplace Basics: The Skills Employers Want** (Washington, D.C.: American Society for Training and Development, 1988); Peter Cappelli, **College and the Workplace: How Should We Assess Student Performance?,** National Center on the Educational Quality of the Workforce (Philadelphia: University of Pennsylvania, 1992); W.Norton Grubb et al., **Betwixt and Between: Education, Skills, and Employment in Sub-Baccalaureate Labor Markets**, National Center for Research in Vocational Education (Berkeley: University of California at Berkeley, December 1992); The Olsten Forum on Human Resource Issues and Trends, **Skills**

for Success (Westbury, New York: The Olsten Corporation, 1994). The KSAs listed in these reports are similar to a recent survey of 600 employers conducted by Michigan State University's placement office. See, "Odd Jobs," **Washington Post,** November 13, 1994, H12.

8. Some of the widely-used job analysis systems are the Hay Associates Profile System; the Position Analysis Questionnaire; The Management Position Description Questionnaire; the Threshold Traits Analysis System; the Ability Requirement Scales. For a brief review of these systems, see, Cappelli, "College and the Workplace: How Should We Assess Student Performance?"

9. See, American College Testing, **Performing a National Job Analysis Study: Overview Methodology and Procedure** (Iowa City, Iowa: ACT, August 1994).

10. See, **Raising the Standard: Electronics Technician Skills for Today and Tomorrow** (Washington, D.C.: Electronics Industry Foundation, June 1994). For another example, see: **Raising Retail Standards** (Washington, D.C.: National Retail Federation, October 1994).

11. "Colleges are Not Adequately Preparing Accounting Graduates for First Jobs, Say Corporate Executives," **Business Wire**, August 15, 1994.

12. See, Cyndee Miller, "MBA Programs Revised to Meet Leaner Demands of Business," **Marketing News**, 27:15 (July 1993); and, Roger Jenkins, "A New Era in MBA Education," **Survey of Business,** 28:1 (Summer 1992).

13. Bruce Bernstein, "Teaming for Better Training—Universities and High-Tech Firms Need to Work Together to Produce Sufficiently Skilled Work Force," **Information Week**, December 5, 1994, 114.

14. Secretary's Commission on Achieving Necessary Skills, **What Work Requires of Schools: A SCANS Report for America 2000** (Washington, D.C.: U.S. Department of Labor, 1991).

15. See, for example, Gerald Bracey, "Why Can't They Be Like We Were," **Phi Delta Kappan**, 1991, 73(2), 104-117.

16. For an excellent discussion on the problem of employer survey methodologies and their interpretation, see, Gary Natriello, "What Do Employers Want in Entry-Level Workers? An Assessment of the Evidence," National Center for Education and Employment (New York: Columbia University, 1989).

17. For an insightful discussion of this issue, see W. Norton Grubb et al., **Betwixt and Between: Education, Skills, and Employment in Sub-Baccalaureate Labor Markets**, National Center for Research in Vocational Education (Berkeley: University of California at Berkeley, December 1992).

18. For a review of these surveys, see, Peter Cappelli, "Is the 'Skills Gap' Really About Attitudes?", National Center for Educational Quality in the Workplace (Philadelphia: University of Pennsylvania, 1992).

19. See, "First Findings: The EQW National Employer Survey," National Center for Educational Quality of the Workforce (Philadelphia: University of Pennsylvania, March 1994).

20. Cappelli, **College and the Workplace: How Should We Assess Student Performance?**

21. See, for example, Robert Zemsky and Penny Oedel, "Higher Education and the Changing Nature of the American Workforce—Responses, Challenges, and Opportunities," Institute for Research on Higher Education (Philadelphia: University of Pennsylvania, 1994).

22. Zemsky and Oedell, 13.

23. For a useful discussion of the connection between community colleges and businesses see, Grubb et al., **Betwixt and Between: Education, Skills and Employment in Sub-baccalaureate Labor Markets**, December 1992, 39-59. See also, State Higher Education Executive Officers Committee on Workforce Preparation, "Building a Quality Workforce: An Agenda for Postsecondary Education" (Denver: State Higher Education Executive Officers, 1992).

24. National Center on Postsecondary Teaching, Learning, and Assessment, **National Assessment of College Student Learning: Identifying College Graduates' Essential Skills in Writing, Speech, and Listening, and Critical Thinking**, National Center for Education Statistics (Washington, D.C.: U.S. Department of Education, 1994). See also, National Center for Education Statistics, **National Assessment of College Student Learning: Getting Started** (Washington, D.C.: U.S. Department of Education, 1992).

25. For a summary of the debate, see, National Center for Education Statistics, **The National Assessment of College Student Learning: Identification of Skills to Be Taught, Learned, and Assessed** (Washington, D.C.: National Center for Education Statistics, 1994).

26. Stephen B. Dunbar, "On the Development of a National Assessment of College Student Learning: Measurement Policy and Practice in Perspective," paper commissioned for the National Assessment of College Student Learning (Washington, D.C.: U.S. Department of Education, 1991).

27. National Center on Postsecondary Teaching, Learning, and Assessment, **National Assessment of College Student Learning**, 1994, 167. See also, Elizabeth Jones, "A Literature Search and Listing of the Communication, Writing, and Critical Thinking Skills Needed by College Graduates," National Center on Postsecondary Teaching, Learning, and Assessment (University Park, PA: The Pennsylvania State University, 1992).

28. National Center for Education Statistics, " A Preliminary Study of the Feasibility and Utilization for National Policy of Instructional 'Good Practice' Indicators in Undergraduate Education" (Washington, D.C.: U.S. Department of Education, August 1994).

29. Grubb et al., **Betwixt and Between**, 61.

Appendix A: Survey Methodology

The Business and Higher Education Forum (BHEF) survey was developed by the author in consultation with the Center for Public Interest Polling (CPIP) at the Eagleton Institute of Politics, Rutgers University. Prior to the distribution of the questionnaire, two focus groups were conducted with employers and the survey instrument was pre-tested. The sampling frame for this study was a Dun and Bradstreet listing of companies whose headquarters are located, or who have a branch office, in New Jersey, and who have 25 or more employees at the company locale.

Companies were segmented into seven categories based on the primary Standard Industry Classification (SIC). The categories are: construction; manufacturing; wholesale trade; retail trade; transportation, communication and utilities (TCU); finance, insurance, real estate (FIRE); and services. The sample was based on the New Jersey population percentages for each SIC. To compensate for the relatively large percentage of companies in the manufacturing, wholesale and retail trade, and services sectors they were under-sampled; TCU and FIRE were over sampled due to their relatively small share. Agriculture, Forestry and Fishing, and Mining were excluded because they are an extremely small percentage of New Jersey industries. Also excluded from the sample were state, county and local general purpose government employers. Included in the sample were private and public educational institutions. By over- and under-sampling the number of responses from all sectors would be balanced or about equal. The final sample percentages for each SIC are in Table A at the end of this section.

The percentages obtained in a sample survey are estimates of what the distribution of responses would be if the entire population had been surveyed. Sampling error describes the probable difference between surveying everyone in a given population and a sample drawn from that population. The sampling error associated with a four hundred and four person sample at a 95% confidence interval is about plus or minus 5% (+/-5%). Thus, if 47% of those in a sample agree with a question, the percentage of agreement in the population from which the sample is drawn would be between 42% and 52% (47% +/- 5%) 95 times out of 100. Sampling error increases as the sample size is reduced. One must be cautious when comparing smaller subgroups since the sampling error would exceed +/-5 percent. Of course, sampling error does not take account of other possible sources of error inherent in any study of public opinion.

Surveys were mailed out to chief executives or human resource vice presidents or managers at all companies in the sample of 2,230. The packet included: the questionnaire, a postage paid return envelope and a cover letter from the author. Follow-up postcards were sent to companies who did not initially respond; each company addressee was asked to return the questionnaire or to call if they needed another questionnaire. Subsequently, phone calls were made to companies from the remaining eligible sample requesting them to return the survey or, if they did not receive a survey, if another one could be sent. Four hundred and four companies, or 18% of the eligible sample responded to the survey.

All of the completed questionnaires were edited to insure quality control. The responses on the questionnaires were entered into a computer readable data file; the data entry was 100% verified. A Statistical Package for the Social Sciences (SPSS) computer file was programmed to process the survey information. After an initial set of frequency distributions were created, additional sub-group (profile) analysis was implemented based on several independent variables: size of company; combined SIC code; whether companies hired college graduates or not; whether companies hired New Jersey college graduates; whether companies provided training; and whether New Jersey colleges or universities provided training in the last three years.

TABLE A

SIC	POPULATION	SAMPLE
CONSTRUCTION	4% (N=856)	4% (n=127)
MANUFACTURING	19% (N=3851)	16% (n=477)
TCU	8% (N=1544)	14% (n=441)
WHOLESALE TRADE	9% (N=1871)	8% (n=232)
RETAIL TRADE	18% (N=3646)	15% (n=452)
FIRE	8% (N=1369)	13% (n=391)
SERVICES	35% (N=7115)	29% (n=881)

Appendix B
Results of the Survey of New Jersey Employers

1. Overall, how prepared are students graduating with bachelor's degrees from New Jersey's colleges and universities for jobs in companies like yours?

	N	% of Respondents
Highly prepared	47	13.9
Prepared, but could be better	204	60.7
Somewhat prepared, with noticeable deficiencies	74	21.1
Not prepared	11	3.3
No response	69	.....

2. Overall, how prepared are students graduating with associate's degrees from New Jersey's community colleges for jobs in companies like yours?

	N	% of Respondents
Highly prepared	20	6.3
Prepared, but could be better	136	44.0
Somewhat prepared, with noticeable deficiencies	118	38.1
Not prepared	36	11.6
No response	95	.....

3. Would you say that the quality of job applicants coming from baccalaureate programs in New Jersey colleges and universities is better, worse, or about the same as the quality of job applicants coming from colleges and universities outside of New Jersey?

	N	% of Respondents
Better	28	8.4
Worse	39	11.8
Same	264	79.8
No response	74	.....

4. Over the past five years, would you say that the quality of job applicants with a bachelor's degree from a New Jersey college or university has . . .

	N	% of Respondents
Gotten better	67	20.5
Gotten worse	63	19.2
Stayed about the same	198	60.4
No response	76	.....

5. Over the past five years, would you say that the quality of job applicants with an associate's degree from a New Jersey community college has . . . .

	N	% of Respondents
Gotten better	65	21.2
Gotten worse	59	19.2
Stayed about the same	182	59.6
No response	99	.....

6. Please indicate how important it is for employees at your company to be well- prepared in each of the skills listed below. Next to each skill listed below, place a "1" if it is extremely important, a "2" if it is very important, a "3" if it is somewhat important, or a "4" if it is not too important.

a. **READING** (locating, understanding, and interpreting written information in documents such as manuals, graphs and schedules).

	N	% of Respondents
Extremely important	281	70.2
Very important	98	24.6
Somewhat important	18	4.5
Not too important	3	0.8
No Response	5	.....

b. **WRITTEN COMMUNICATION** (communicating ideas and information through documents such as letters, manuals, reports, and graphs).

	N	% of Respondents
Extremely important	226	56.4
Very important	110	27.4
Somewhat important	51	12.7
Not too important	14	3.4
No Response	5	.....

c. **ORAL COMMUNICATIONS** (communicating ideas and information through verbal presentations).

	N	% of Respondents
Extremely important	276	68.3
Very important	100	24.9
Somewhat important	24	5.9
Not too important	3	0.9
No Response	3	.....

d. **MATH** (performing basic computations and approaching problems by using appropriate math techniques).

	N	% of Respondents
Extremely important	139	34.7
Very important	146	36.3
Somewhat important	86	21.4
Not too important	31	7.6
No Response	3	.....

e. **LISTENING** (attending to and interpreting verbal messages from others).

	N	% of Respondents
Extremely important	291	72.5
Very important	100	25.0
Somewhat important	9	2.3
Not too important	1	0.2
No response	3	.....

f. **CREATIVE THINKING** (generating new ideas).

	N	% of Respondents
Extremely important	134	33.5
Very important	171	42.6
Somewhat important	79	19.8
Not too important	16	4.1
No response	3	.....

g. **DECISION MAKING** (prioritized goals, generates alternatives and considers risks, chooses best alternative)

	N	% of Respondents
Extremely important	168	41.8
Very important	174	43.4
Somewhat important	53	13.3
Not too important	6	1.5
No response	3	.....

h. **PROBLEM-SOLVING** (recognizing problems and devising and implementing plans to solve them).

	N	% of Respondents
Extremely important	209	52.0
Very important	158	39.3
Somewhat important	32	8.1
Not too important	3	0.7
No response	3	.....

i. **KNOWING HOW-TO-LEARN** (acquires and applies new knowledge and skills).

	N	% of Respondents
Extremely important	208	52.0
Very important	160	40.0
Somewhat important	28	7.1
Not too important	4	0.9
No response	4	.....

j. **RESPONSIBILITY AND SELF-MANAGEMENT** (exerts high levels of effort, strives to achieve goals, monitors progress, and exhibits self-control).

	N	% of Respondents
Extremely important	219	55.0
Very important	148	37.2
Somewhat important	28	7.0
Not too important	3	0.8
No response	6	.....

k. **SELF-ESTEEM** (maintains a positive view of self and of one's job).

	N	% of Respondents
Extremely important	188	47.0
Very important	166	41.6
Somewhat important	41	10.2
Not too important	5	1.2
No response	5	.....

l. **SOCIABILITY** (works and interacts well with others).

	N	% of Respondents
Extremely important	183	45.8
Very important	166	41.5
Somewhat important	50	12.5
Not too important	1	0.2
No response	5	.....

m. **INTEGRITY AND HONESTY** (chooses ethical courses of action).

	N	% of Respondents
Extremely important	260	84.1
Very important	45	14.6
Somewhat important	3	1.1
Not too important	1	0.2
No response	96	.....

n. **DIVERSITY** (able to function in a multi-cultural and diverse work environment).

	N	% of Respondents
Extremely important	172	43.3
Very important	136	34.1
Somewhat important	75	18.9
Not too important	15	3.7
No response	7	.....

7. Of the 14 skills listed above, which are the three skills that are most important for employees at your company to have? Please record the letter to the left of the skills listed above, in order of their importance:

Most important skill to have:	N	% of Respondents
a) oral communication	66	17.2
b) reading	59	15.4
c) integrity	55	14.4

8/9. Now think about the employees whom your company has recently hired who have a bachelor's degree/ or associates degree) from a New Jersey college or university. Going back over the list of skills, please indicate how well these employees are prepared in each skill area.

a. **READING** (locating, understanding, and interpreting written information in documents such as manuals, graphs and schedules).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	94	32.5	26	12.1
Prepared, but could be better	162	55.7	114	53.9
Somewhat prepared, with noticeable deficiencies	31	10.8	61	29.0
Not prepared	3	0.9	26	5.0
No response	114	.....	193	.....

b. **WRITTEN COMMUNICATION** (communicating ideas and information through documents such as letters, manuals, reports, and graphs).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	46	15.8	16	7.7
Prepared, but could be better	145	50.0	79	37.5
Somewhat prepared, with noticeable deficiencies	76	26.2	88	41.9
Not prepared	23	8.0	27	12.9
No response	115	.....	193	.....

c. **ORAL COMMUNICATIONS** (communicating ideas and information through verbal presentations).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	53	18.4	14	6.8
Prepared, but could be better	165	56.7	102	48.4
Somewhat prepared, with noticeable deficiencies	65	22.5	83	39.2
Not prepared	7	2.5	12	5.7
No response	114	.....	193	.....

d. **MATH** (performing basic computations and approaching problems by using appropriate math techniques).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	68	24.2	19	9.1
Prepared, but could be better	135	47.9	88	42.7
Somewhat prepared, with noticeable deficiencies	62	21.9	78	38.0
Not prepared	17	2.5	21	10.0
No response	122	.....	198	.....

e. **LISTENING** (attending to and interpreting verbal messages from others).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	54	18.5	19	9.1
Prepared, but could be better	149	51.4	97	46.1
Somewhat prepared, with noticeable deficiencies	78	26.7	80	38.2
Not prepared	10	3.4	14	6.7
No response	113	.....	194	.....

f. **CREATIVE THINKING** (generating new ideas).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	33	11.7	9	4.1
Prepared, but could be better	139	48.6	77	37.2
Somewhat prepared, with noticeable deficiencies	83	29.1	85	41.0
Not prepared	30	10.7	36	17.6
No response	119	.....	198	.....

g. **DECISION-MAKING** (prioritized goals, generates alternatives and considers risks, chooses best alternative).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	32	11.0	8	3.9
Prepared, but could be better	136	47.1	72	34.6
Somewhat prepared, with noticeable deficiencies	99	34.3	100	48.3
Not prepared	22	7.7	27	13.2
No response	116	.....	197	.....

h. **PROBLEM-SOLVING** (recognizing problems and devising and implementing plans to solve them).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	29	10.0	8	3.8
Prepared, but could be better	158	54.8	84	40.4
Somewhat prepared, with noticeable deficiencies	83	28.8	86	41.5
Not prepared	19	6.4	30	14.4
No response	115	.....	196	.....

i. **KNOWING HOW-TO-LEARN** (acquires and applies new knowledge and skills).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	49	16.9	17	8.0
Prepared, but could be better	161	55.3	97	47.0
Somewhat prepared, with noticeable deficiencies	69	23.6	75	36.3
Not prepared	12	4.1	18	8.7
No response	114	.....	197	.....

j. **RESPONSIBILITY AND SELF-MANAGEMENT** (exerts high levels of effort, strives to achieve goals, monitors progress, and exhibits self-control).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	49	16.7	12	5.8
Prepared, but could be better	150	51.4	95	45.2
Somewhat prepared, with noticeable deficiencies	80	27.5	79	37.7
Not prepared	13	3.2	24	11.3
No response	112	.....	195	.....

k. **SELF-ESTEEM** (maintains a positive view of self and of one's job).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	77	26.9	29	14.2
Prepared, but could be better	168	58.4	123	59.5
Somewhat prepared, with noticeable deficiencies	38	13.3	46	23.8
Not prepared	4	1.0	5	2.5
No response	117	.....	197	.....

l. **SOCIABILITY** (works and interacts well with others).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	96	33.0	47	22.4
Prepared, but could be better	168	58.1	132	63.2
Somewhat prepared, with noticeable deficiencies	22	7.5	26	12.6
Not prepared	4	1.4	4	1.8
No response	115	.....	196	.....

m. **INTEGRITY AND HONESTY** (chooses ethical courses of action)

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	109	37.8	60	28.8
Prepared, but could be better	152	52.6	124	59.3
Somewhat prepared, with noticeable deficiencies	25	8.8	23	11.2
Not prepared	2	0.8	1	0.7
No response	116	.....	196	.....

n. **DIVERSITY** (able to function in a multi-cultural and diverse work environment).

	Q.8 Bachelor's Degree		Q.9 Associate's Degree	
	N	% Res.	N	% Res.
Highly prepared	88	21.8	47	22.9
Prepared, but could be better	134	46.9	103	50.4
Somewhat prepared, with noticeable deficiencies	47	16.7	39	18.9
Not prepared	16	5.5	16	7.8
No response	120	.....	200	.....

10. How difficult is it for your company to find well-prepared job candidates from New Jersey colleges and universities for positions that require a bachelor's degree?

	N	% of Respondents
Very difficult	42	13.1
Somewhat difficult	142	44.2
Not too difficult	114	35.6
Not at all difficult	23	7.2
No response	84	.....

11. How difficult is it for your company to find well-prepared job candidates from New Jersey colleges and universities for positions that require an associate's degree?

	N	% of Respondents
Very difficult	40	14.0
Somewhat difficult	98	34.4
Not too difficult	125	43.7
Not at all difficult	23	8.0
No response	119	.....

12. Thinking about the new employees your company has hired over the past three years, about what percentage of those hired are:

	Mean %
a. From universities and colleges in New Jersey?	55.4
b. From American colleges and universities outside of New Jersey?	38.9
c. From international colleges and universities?	4.1

13. Are there any particular highly skilled positions that your organization has had a difficult time filling in the past three years?

	N	% of Respondents
Yes	210	63
No	123	37
No Response	71	.....

14. What types of positions have you had difficulty filling during the past three years? Please circle as many as apply.

	N	Mean %
a. Executive, Administrative, Managerial	75	18.6
b. Professional Specialty (engineers, lawyers, scientists)	87	21.6
c. Technicians and related support (paralegal, programmers)	62	15.3
d. Marketing and sales professionals	56	13.9
e. Other (specify):	87	21.5

15. How important are each of the following to your company in how it recruits new college graduates from New Jersey colleges and universities?

	N	% of Respondents
a. Past recruiting experiences with a college or university.		
very important	56	18.3
somewhat important	106	34.8
not too important	62	20.3
not important	81	26.6
no response	98	.....
b. Existing business relationships with a college or university.		
very important	39	12.9
somewhat important	88	28.8
not too important	79	26.1
not important	98	32.2
no response	100	.....
c. The quality of a college/university placement office.		
very important	64	21.0
somewhat important	105	34.7
not too important	68	22.5
not important	66	21.8
no response	100	.....

	N	% of Respondents
d. How selective a college/university is in accepting students.		
very important	55	18.1
somewhat important	114	37.3
not too important	74	24.1
not important	63	20.5
no response	98	.....
e. Existing experience-based learning relationships, such as cooperative education and internships.		
very important	92	30.0
somewhat important	115	37.8
not too important	52	16.9
not important	47	15.3
no response	99	.....

16. Below is a list of different types of New Jersey higher education institutions. Based on your experiences, rate each as either excellent, good, only fair, or poor in terms of its responsiveness to your company's recruiting needs.

	N	% of Respondents
a. Community colleges		
excellent	39	14.2
good	133	48.2
only fair	78	28.2
poor	26	9.4
no response	128	.....
b. State colleges		
excellent	46	15.6
good	174	58.8
only fair	59	19.9
poor	17	5.7
no response	108	.....
c. Private colleges		
excellent	70	24.7
good	154	53.9
only fair	46	16.3
poor	15	5.1
no response	120	.....

d. State universities	N	% of Respondents
excellent	70	23.4
good	170	57.0
only fair	43	14.3
poor	16	5.3
no response	106	.....

e. Private universities		
excellent	96	33.3
good	136	47.2
only fair	40	14.0
poor	16	5.4
no response	117	.....

17. The following are some suggestions for how New Jersey colleges and universities might improve recruiting relationships with your company. For each suggestion, please indicate whether it would greatly improve, improve, only marginally improve, or not improve your company's recruiting relationship with colleges and universities.

	N	% of Respondents
a. Having a single point of contact at a college/university whom you could call for information about students		
greatly improve	103	33.7
improve	146	47.6
marginally improve	32	10.5
not improve	25	8.2
no response	98	.....
b. Having colleges/universities provide more detailed information about its students.		
greatly improve	85	27.7
improve	131	42.9
marginally improve	60	19.5
not improve	30	9.8
no response	98	.....
c. Having colleges/universities administer and make available student competency test scores		
greatly improve	36	11.7
improve	110	36.1
marginally improve	109	35.6
not improve	51	16.6
no response	99	.....
d. Having colleges/universities incorporate more experienced-based learning such as internships and cooperative learning.		
greatly improve	156	50.9
improve	111	36.3
marginally improve	27	8.8
not improve	12	4.0
no response	98	.....

e. Having colleges/universities establish a faculty loan program so that they can become more familiar with your company's recruiting needs.

	N	% of Respondents
greatly improve	42	14.0
improve	96	31.6
marginally improve	99	32.6
not improve	66	21.8
no response	101	.....

f. Having colleges/universities solicit and implement ideas from business to improve the curriculum.

greatly improve	135	43.6
improve	125	40.5
marginally improve	32	10.4
not improve	17	5.5
no response	96	.....

18. Does your company currently provide any training to upgrade or develop the skills of your professional employees?

	N	% of Respondents
a. Yes — CONTINUE WITH QUESTION 19	293	74.1
b. No — PLEASE GO TO QUESTION 27	102	25.9
c. No Response	9	.....

19. In what areas does your company provide training? Please circle as many as apply. The percentage responses indicate training provided.

	N	% of Respondents
a. Reading	59	14.6
b. Written Communication	115	28.4
c. Oral Communication	131	32.3
d. Math	63	15.6
e. Listening	109	26.9
f. Creative Thinking	116	28.8
g. Decision-Making	159	39.4
h. Problem-Solving	182	45.0
i. Knowing How-to-Learn	60	14.8
j. Responsibility and Self-Management	157	38.8
k. Self-Esteem	64	15.9
l. Sociability	52	12.8
m. Integrity and Honesty	66	16.3
n. Diversity	82	20.3
o. Other: _____	105	25.9

20. Below are five different ways that your company might provide training to employees. In the space to the right of each item, please estimate the percentage of all training provided that way.

	%
a. Structured classroom training given by a company employee	22.9%
b. On-the-job training provided by company employees	47.8%
c. Training provided by private consultants or trainers	18.4%
d. Training provided by community colleges	4.3%
e. Training provided by a 4-year college or university	6.4%
	100.0%

21. How would you rate the quality of the training provided to your company for each of the categories below — excellent, good, only fair, or poor?

a. Structured classroom training given by a company employee.	N	% of Respondents
excellent	59	28.2
good	124	59.4
fair	22	10.4
poor	4	2.1
no response	195	.....
b. On-the-job training provided by company employees.		
excellent	61	23.9
good	154	60.7
fair	36	14.2
poor	3	1.2
no response	150	.....
c. Training provided by private consultants or trainers.		
excellent	71	33.7
good	115	54.5
fair	21	10.0
poor	4	1.8
no response	194	.....
d. Training provided by community colleges.		
excellent	13	14.0
good	56	58.4
fair	19	20.2
poor	7	7.4
no response	308	.....

e. Training provided by a 4-year college or university.

excellent	24	21.8
good	62	56.5
fair	18	16.6
poor	6	5.1
no response	295	.....

22. Following are 5 classifications of employees. Please estimate the percentage of your company's training resources that are allocated to each employee classification.

	Mean %
a. Executive (high level managers with profit and loss responsibility or setting organizational objectives)	15.3
b. Managers/Supervisors (those with responsibilities for subordinates activities)	24.1
c. Core Process Staff (those providing the goods and services that constitute your product)	36.9
d. New Hires (with at least a high school education)	22.1
e. Recently separated employees (training to assist in worker adjustment due to restructuring)	1.9
	100.0

23. Has your company utilized federal or state assistance for worker training?

	N	% of Respondents
a. YES	59	20.6
b. NO	229	79.4
c. No Response	116	.....

24. Have any New Jersey colleges or universities provided training or assistance to your company within the past three years?

	N	% of Respondents
a. YES — CONTINUE WITH QUESTION 25	86	29.7
b. NO — PLEASE GO TO QUESTION 27	203	70.3
c. No Response	115	.....

25. Below are different types of institutions which may have provided assistance or training to your company. Indicate whether your company has or has not received assistance or training from that type of institution.

	N	% of Respondents
a. Community college		
Has	59	60.6
Has not	38	39.4
No response	307	.....

b. State college	N	% of Respondents
Has	46	49.7
Has not	46	50.3
No response	313	.....
c. Private college		
Has	23	25.1
Has not	67	74.9
No response	315	.....
d. State university		
Has	48	52.3
Has not	44	47.7
No response	312	.....
e. Private university		
Has	21	23.6
Has not	68	76.4
No response	315	.....

26. For each institution your company has used for training or assistance, indicate in Column B the type of employees for which assistance was provided.

	N size
a. Community College	
1. executives	16
2. managers/supervisors	39
3. core process staff	50
4. new workers	22
5. separated employees	4
b. State College	
1. executives	16
2. managers/supervisors	33
3. core process staff	34
4. new workers	21
5. separated employees	1
c. Private College	
1. executives	9
2. managers/supervisors	14
3. core process staff	14
4. new workers	7
5. separated employees	0

d. State University	N size
1. executives	27
2. managers/supervisors	38
3. core process staff	32
4. new workers	12
5. separated employees	1

e. Private University	N size
1. executives	15
2. managers/supervisors	16
3. core process staff	11
4. new workers	4
5. separated employees	0

27. The following are some suggestions for how colleges and universities might improve training relationships with your company. For each suggestion, please indicate whether it would greatly improve, improve, only marginally improve, or not improve your company's training relationship with colleges and universities.

a. Having a single point of contact at a college/university to provide information about training.

	N	% of Respondents
greatly improve	132	39.1
some improvement	140	41.4
marginally improve	44	12.9
not improve	22	6.5
no response	66	.....

b. Having colleges/universities provide more detailed information about its training capabilities

greatly improve	145	42.7
some improvement	137	40.2
marginally improve	38	11.0
not improve	21	6.1
no response	64	.....

c. Having colleges/universities become more involved in providing customized training for your company.

greatly improve	118	35.2
some improvement	121	36.1
marginally improve	52	15.5
not improve	44	13.2
no response	69	.....

d. Having colleges/universities be more flexible in providing on-site training at your company.

greatly improve	116	34.1
some improvement	118	35.0
marginally improve	51	15.2
not improve	53	15.8
no response	65	.....

e. Having colleges/universities solicit and implement input from businesses in designing their training curriculum.

	N	% of Respondents
greatly improve	155	45.5
some improvement	119	35.0
marginally improve	37	10.9
not improve	29	8.5
no response	64	.....

28. Does your company have a tuition reimbursement program for employees who take courses at a college or university?

	N	% of Respondents
a. Yes	218	54.9
b. No	179	45.1
c. No Response	8	.....

29. Which of the following best describes your company?

	N	% of Respondents
a. Construction	16	4.1
b. Manufacturing	84	21.1
c. Transportation, communications, utility	24	6.0
d. Wholesale trade	31	7.7
e. Retail trade	53	13.4
f. Finance, insurance, real estate	27	6.8
g. Services	158	39.7
h. Other: _____	5	1.2
i. No Response	6	.....

30. What approximately were the total sales for your company in its most recently completed fiscal year?
$ 10 million — Median Income

31. What is your official position or title in this company?

	N	% of Respondents
a. President-CEO	105	26.6
b. VP	35	9.0
c. Manager	79	19.9
d. Human Resources	72	18.3
e. Admin. Asst.	14	3.4
f. Controller	16	4.0
g. Directors	31	7.9
h. Principal-Supers	34	8.6
i. Other	9	2.3
j. No Response	9	.....

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